3. *Spirostreptus corculus*, sp. n.

Head testaceous, with the front of the clypeus and labium castaneous; antennæ reddish castaneous; a broad blackish band connecting the ocular plates; nuchal plate blackish brown, with whitish anterior margin; dorsal segments with a whitish central stripe, in front of which they are dark ochreous and behind it stramineous, exeepting at the sides, where there is a broad diffused brown longitudinal band; along the centre of the dorsal region there is also a more defined blackish band; legs pale flesh-eoloured.

Body long, smooth, polished, rather suddenly attenuated towards the anal extremity: head rather large, almost eircular when viewed in front; clypeus expanded at the sides, truncated in front, without a central sutural line; antennæ with long cylindrical joints, much as in the preeeding species; ocular plates cuneiform, but with convex anterior margin, next to which there are ten faeets, whereas the posterior margin only numbers from seven to eight; nuchal plate scareely narrower at the sides than in the dorsal region, and therefore terminating on each side in a regularly-arched lobe, which is obliquely striated and has an indented line in front; dorsal segments tumid behind the middle line, longitudinally striated at the sides; preanal segment carinated along the posterior margin, oblique at the sides, and very slightly convex, terminating in a rather obtuse angle; subanal plate narrow, elongate-triangular, indented in front; anal plates compressed along the dorsal and posterior margins; fifty-six segments in all; legs rather long and slender, slightly compressed.

Total length 26 millim., or about 1 ineh; width of nuchal plate 2 millim., at centre of body $2\frac{1}{4}$ millim., of preanal segment $1\frac{1}{2}$ millim.

Fairly numerous, but not so much so as the two larger speeies.

Dr. Karseh deseribes a speeies of *Spirostreptus* from N.E. Madagasear in the 'Zeitsehrift für die gesammten Naturwissenschaften' for last year (p. 48), under the name of *Spirostreptus* (*Nodopyge*) *alligans*; and, notwithstanding the brevity and imperfection of the deseription, which even fails to give measurements, I am satisfied of its distinetness from any of the species here deseribed.

MISCELLANEOUS.

The Genus Carterella *versus* Spongiophaga Pottsi.

Mr. Edward Potts referred to a paper ("On *Spongiophaga Pottsi*, n. sp.," Ann. and Mag. of Nat. Hist., Nov. 1881) by H. J. Carter,

F.R.S., &c., in which that eminent scientist gives an interpretation, differing from his own, of the statosphere tendrils which form the characteristic feature of the new genus of freshwater sponges to which Mr. Carter's name had been attached in recognition of his very distinguished services. He wished to consider the subject entirely apart from its personal relation to themselves, and only as it concerned the stability of a genus, in which, as he claimed, for the first time in the history of freshwater sponges, these tendrils had been noticed as distinctive features.

He then, at some length, gave his reasons why we should not accept Mr. Carter's theory of the parasitic nature of these tendrils or filaments, saying that of the two points in the paper most likely to impress a student who had not seen specimens of the genus referred to, or one unfamiliar with the general subject, the *first* was founded upon certain appearances represented in figure 2 of Mr. Carter's plate. This figure shows an "axial canal" through the centre of the filament, widening into the "tubular prolongation from the process of the chitinous coat" of the statosphere and representing the supposable digestive tract of the animal parasite.

As after repeated and very careful examination of numerous specimens, both in a fresh condition and after being subjected to different methods of preparation, he had failed entirely to meet with an instance showing similar appearances, he referred specimens of all three species of the genus to Prof. Jos. Leidy, whose fame as an accurate observer is world-wide; to Mr. Jno. A. Ryder, and to Prof. Kellicott and Mr. Henry Mills of Buffalo, the discoverers of one of the above species. The efforts of these gentlemen were equally unsuccessful, their opinion being well expressed in Prof. Leidy's words, "In my mind there can be no question as to the tendrils being part of the structure of the statoblast; and their parasitic nature would never have occurred to me." "The tendrils are homogeneous extensions of the inner capsule of the statoblast; and I see no trace of the appearance to which you refer in Carter's figure 2." A paragraph from the letter of Prof. Kellicott makes a further point. These processes "are not found on the statoblasts of any other species in the Niagara river; I have examined hundreds of the statoblasts of *Carterella tubisperma*, and have not found one without said tube. I brought some of these, having wintered in the river, to my room last May; after a few days, there was sponge-growth; so this form, if a parasite, did not destroy the life, &c."

The *second* point made by Mr. Carter was that the species marked *C. tubisperma* from Buffalo was identical, as shown by its spiculation, with one marked *Heteromeyenia repens* from Lehigh Gap, Pa. That one of these identical species should exhibit the tubular prolongation and accompanying tendrils, while the other did not, was considered presumptive evidence that the former was affected in some abnormal way. To this Mr. Potts answered, that while there was unquestionably much similarity in shape of the birotulate spicules of the two sponges, covering the "seed-bodies" in the ordinary fashion as a second or outer coat, the Lehigh-Gap species alone exhibited the second class of long birotulates, interspersed

with the others, which had induced him to place it in the genus *Heteromeyenia*. For this reason he believed the species were not identical, and this argument fails.

In continuation he reasoned that it should not be considered a matter of surprise that the statospheres of some genera pertaining to the family of freshwater sponges should present tentative features of this character. In a paper published so long ago as 1859, Mr. Carter called attention to the resemblance in appearance and function between the statoblasts of the Polyzoa and the so-called "seed-bodies" of *Spongilla*. The parallelism is rendered more complete when we observe that in those forms of Polyzoa possessing a comparatively rigid ectocyst, the statoblosts are circular or lenticular with smooth margins. Some of these are no doubt washed out from the tubular body from time to time during the winter, to extend the species to other places; while enough are retained by it to renew the growth in the original locality. On the other hand, where the body-mass is simply gelatinous, as in *Pectinatella*, *Cristatella*, &c., decaying away and releasing the statoblasts on the first approach of winter, these are provided with either a single row or a more complicated series of marginal tentacular hooks, by which they become matted together, entangled with roots, stems, &c., or held to rough places on planks or stones.

The same relation to the permanency of their skeleton structure we find existing amongst these genera and species of freshwater sponges. The statospheres of nearly all species are provided with some arrangement for protection and retention. These vary greatly in kind and degree, inversely according to the protection afforded them by the surrounding skeleton. Perhaps the lowest in the series in this regard is *Meyenia Leidyi*. This is a thin incrusting sponge, the skeleton-spicula stout and firmly matted together, maintaining the position of the form and the mass throughout the year. The statospheres are formed in the autumn, in the lowest parts of the sponge, within special capsules formed by interlacing spicula. It is hardly possible these should wash away; and accordingly we find no means provided peculiar to themselves for detaining them. Their armour consists of a closely laid series of birotulate spicula with entire margins, excellent as a shield, but hopelessly useless as a means of retention. On the other hand no apparent means of diffusion are provided; and as a consequence the species seems to be extremely local, none having been noticed except in the stream where the first specimen was gathered, and within a few yards of the probable spot.

Spongilla fragilis of Leidy, when seen during the summer-time, nearly resembles in form the above-mentioned species; its skeleton-structure, however, is much more fragile, and is frequently detached and washed away, leaving a uniform series of statoblasts standing side by side, with no special coating of spicules for each, as in most other species, but grouped and held together by a common coating of cellular or granular matter, covered by and imbedding a great number of cylindrical spined spicules. A variety of this is often observed (whether it differs specifically in other respects he could

not be certain) in which the statospheres are segregated into groups of four or more, spherically enclosed in a similar coating, thus appearing like one large seed. While the statoblasts of the former arrangement retain their positions during the winter and germinate there in the spring, it may be that *this* is a character assumed for diffusive propagation.

In *Spongilla lacustris* and similar branching sponges, the apparently conflicting ends of retention and diffusion are attained in a different way. The "seed" are formed in the interstices of both the sessile and the branching portions. In the former they are retained during the winter, partially by the agency of recurved spines upon the acerates projecting from the seed-coat; while the fragile branches soon break off and float their contained statospheres to distant parts.

The massive sessile character of many sponges, repeated through various forms of *Spongilla* and *Meyenia*, partially protects their statospheres from the accidents of the winter season; and when that protection fails them, the rays of the birotulate spicules of the latter and the curved acerates of the former come in play to retain a sufficient number until the time of germination in the spring.

Three species of American sponges have been grouped under the generic name *Heteromeyenia*, characterized by the presence of a *second* form of birotulate spicules interspersed amongst the more familiar series. These are about double the length of the former, and are terminated by long recurved hooks. The framework of two of these species is altogether filmy and fugitive; the statospheres are not held within the interspaces of the skeleton or retained in any other way, and are therefore dependent upon the above hooks for their attachment to proper bases for future growth.

Completing the series of retentive agencies, we find the statospheres of the three species of the disputed genus *Carterella* provided, in addition to their birotulate spicules, with long curling or twisting tendrils, extensions, as we have heard, of the tough chitinous coat. These are required to meet the emergency occasioned by the looseness of their skeleton-texture, from which the sarcode-flesh dying early washes away, most of the spicules soon following in the winter floods. The eggs are thus left to the protection of the above tendrils, which lap them together, bind them to the remaining spicules or the roots of water-weeds or shore-plants; or, assuming the rôle of the hair the plasterer uses, bind the deposited silt about them and both to the stones, where they await the appointed time for a new growth. This function is very clearly shown in the collection in Mr. Potts's possession; and the resemblance in material structure of these tendrils to that of the specialized hooks of the forms of Polyzoa referred to is very striking. He hopes therefore that, as both analogy and observed facts seem to indicate the correctness of his position, Mr. Carter will be willing to accept the compliment intended and which is so well deserved.—*Proc. Acad. Nat. Sci. Philad.*, Dec. 6, 1881.